

REMARKS

The Amendment, filed in response to the Advisory Action (“Action”) mailed March 4, 2009, is believed to fully address all and each issue raised in the Action. Favorable reconsideration of the application is respectfully requested.

Applicants incorporate amendments and arguments presented in the Response filed February 17, 2009 by reference in its entirety.

Applicants thank the Examiner for withdrawing the § 112 rejection of October 16, 2008, in view of Applicant’s claim amendments filed February 17, 2009.

Applicants also thank the Examiner for acknowledging the Information Disclosure Statement filed November 6, 2008.

I. Status of Claims

Upon entry of the Amendment of February 17, 2009 and instant Amendment, which is respectfully requested, claims 1, 2 and 4-8 will be pending in the application.

In the instant Amendment, Claim 1 is amended to recite that the emulsion comprises an emulsifier in the amount of 0.5 to 6.0 wt% based on the emulsion, with support in the present specification, for example, at page 9, lines 7-9 and the working Examples. Claim 2 is amended to reflect the amendments to claim 1. Claim 3 is canceled without prejudice or disclaimer.

No new matter is added, and Applicants believe that the amendments to claims 1 and 2 place the application in condition for allowance.

II. Response to Claim Rejection Under 35 U.S.C. § 103(a)

Claims 1-8 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Castenmiller (U.S. Patent No. 4,874,626) in view of Clapp et al. (U.S. Patent No. 5,156,876) and Sejpal et al. (U.S. Patent No. 3,849,580).

Initially and without acquiescing to the merits, claim 3 is canceled.

Applicants traverse the § 103 rejection of claims 1, 2 and 4-8, at least based on the arguments of February 17, 2009, which are incorporated herein by reference. Furthermore, Applicants submit that claims 1, 2 and 4-8 are patentable over Castenmiller in view of Clapp and Sejpal for the additional reasons set forth below.

(i) Castenmiller does not disclose an emulsifier in the presently claimed range:

Amended claim 1 recites that the emulsion comprises an emulsifier in the amount of 0.5 to 6.0 wt% based on the emulsion.

In contrast, although Castenmiller discloses using an emulsifier, the only values for the amount of emulsifier (Admul 6203®) used is disclosed at Examples 1 and 5 of Castenmiller, and are 0.05 and 0.2 wt%, respectively.

Therefore, Castenmiller does not teach or suggest using an emulsifier in an amount as presently claimed.

(ii) The presently claimed foamable composition does not contain any crystallized fat:

Applicants submit that the presently claimed emulsion does not contain any crystallized fat. Applicants submit herewith a copy of a non-patent literature document "Analysis of Oils and

Fats,” Eds. Hamilton and Russell.¹ Table 1.3 at page 36 of Hamilton and Russell discloses a variety of temperature ranges for the melting point of oils and fats. In fact, the Table in Hamilton and Russell demonstrates that the emulsion used in working Examples 3 (soy oil), 5 (canola oil) and 9 (olive oil) of the present application are in liquid form at refrigeration or room temperatures.

In contrast, Castenmiller discloses the presence of crystallized fat. See for example, column 5, lines 45-56 of Castenmiller, which describes that the plastified product of Castenmiller is essentially a solid rather than a liquid such as pourable margarine.

(iii) The present invention uses a propellant, which is not obvious in view of Castenmiller:

Applicants further submit that the foamable composition defined in the claims of the instant application is discharged in the form of a mousse from the pressurized container. Furthermore, the gas propellant a) makes the foamable composition with an optimal amount of bubbles, and b) discharges the composition from the container in the form of a mousse.

In contrast, the composition of Castenmiller already has gas incorporated in the composition before being packed into a container. Therefore, if a propellant is further added to the composition of Castenmiller, followed by dispensing the composition, the bubbles generated due to excess foam formation deflate upon discharge, resulting in the spattering of the

¹ No IDS is required to submit and have the reference be considered by the Examiner because the reference is submitted as evidence directed to an issue of patentability raised in an Office Action and is timely presented. MPEP 609.05(c).

composition. As a result, a mousse-like composition of the present application cannot be formed using the composition of Castenmiller when combined with a propellant.

In view of the above arguments, Applicants submit that Castenmiller is deficient with respect to the currently claimed subject matter because a) Castenmiller does not disclose an emulsifier in the presently claimed range, b) the presently claimed foamable composition does not contain any crystallized fat, and c) the present claimed composition uses a propellant, which is not obvious in view of Castenmiller. Furthermore, neither Clapp nor Sejpal cures the above deficiencies in Castenmiller.

Accordingly, Applicants submit that claims 1, 2 and 4-8 are patentable over Castenmiller in view of Clap and Sejpal. Therefore, Applicants respectfully request reconsideration and withdrawal of the § 103 rejection of claims 1, 2 and 8.

AMENDMENT UNDER 37 C.F.R. § 1.114(c)
U.S. Application No.: 10/539,445

Attorney Docket No.: Q88710

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number **202-775-7588**.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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ANALYSIS OF OILS AND FATS

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FOREWORD

The Federation is representative of producers, dealers, brokers, oilseed crushers, refiners of oils and fats—indeed of all those involved in the international trade in these commodities. It issues contracts to ensure the smooth flow of these commodities from the producing country to the end consumer. All the contracts for oils and fats include quality specifications which have to be determined by analytical methods. Most, if not all, of the contracts require that the oil or fat shall be of 'good merchantable quality'. This is something which is very hard to define but, in assessing it, analytical work will be required.

All the methods described in this work by Dr Hamilton and Dr Rossell are of relevance in one way or another to the determination of quality specifications or as an aid in determining whether an oil or fat is of 'good merchantable quality'. It will therefore be of interest not only to the scientific community which serves the trade but also to those who produce the raw material, those who trade it on the international markets, those who buy it in consuming countries and those who refine it.

It is an erudite work which brings together, inside one cover, probably all the most important references to the analysis methods applicable to oils and fats. It is to be highly recommended both to scientists and to those in the international trade.

DERICK REFFOLD
Chief Executive and Secretary
Federation of Oils, Seeds and Fats
Association Ltd (FOSFA International)

TABLE 1.3
ANALYTICAL PROPERTIES OF SOME OILS AND FATS

| Oil or fat | Refractive index n_D^{20} | Saponification value | Titre value, °C | Melting point, °C |
|-------------------------|-----------------------------|----------------------|-----------------|-------------------|
| Babassu | 1.448-1.455 | 245-256 | 22-23 | 24-26 |
| Borneo tallow (Illipe) | 1.456-1.457 | 190-205 | 51-53 | 37-39 |
| Cocoa butter | 1.456-1.459 | 188-198 | 45-50 | 31-35 |
| Castor bean | 1.466-1.473 | 176-187 | — | -12 to -10 |
| Coconut | 1.448-1.449 | 248-265 | 20-24 | 23-26 |
| Corn (maize) | 1.465-1.468 | 187-193 | 14-20 | -12 to -10 |
| Cottonseed | 1.464-1.468 | 189-198 | 30-37 | -2 to 2 |
| Groundnut | 1.460-1.465 | 187-196 | 26-32 | -2 |
| Grapeseed | 1.473-1.477 | 188-194 | -17 | -10 |
| Kapok | 1.460-1.466 | 189-195 | 27-32 | 30 |
| Kokum | 1.456 | 192 | 60 | 40-42 |
| Lined | 1.474-1.475 | 188-196 | 19-21 | -20 |
| Mowrah | 1.458-1.461 | 188-192 | 42-50 | 25-31 |
| Mustardseed | 1.461-1.469 | 170-184 | 6-8 | -16 |
| Olive | 1.460-1.463 | 182-196 | 17-26 | -3 to 0 |
| Palm | 1.449-1.456 (50 °C) | 190-207 | 40-47 | 33-40 |
| Palm kernel | 1.449-1.452 | 230-254 | 20-28 | 24-26 |
| Rapeseed (high erucic) | 1.465-1.469 | 168-181 | 11-15 | -9 |
| Rapeseed (lower erucic) | 1.465-1.467 | 188-193 | 20-22 | -20 |
| Rice bran | 1.466-1.471 | 179-195 | 25 | 0-8 |
| Safflower | 1.467-1.469 | 186-198 | 15-18 | -18 to -13 |
| Sal fat | 1.456-1.457 | 186-194 | 51 | 33-39 |
| Sesame seed | 1.465-1.469 | 187-195 | 20-25 | -4 to 0 |
| Shea nut | 1.463-1.467 | 178-190 | 49-54 | 37-42 |
| Soyabean | 1.467-1.470 | 188-195 | 20-21 | -23 to -20 |
| Sunflower seed | 1.466-1.469 | 188-194 | 16-20 | -18 to -16 |
| Teaseed | 1.462-1.464 | 190-195 | 13-14.5 | -9 to -5 |
| Tung | 1.510-1.520 (20 °C) | 189-195 | 36-37 | 4 |
| Walnut | 1.469-1.471 | 189-198 | 14-16 | -16 to -12 |
| Butter (cows) | 1.452-1.457 | 233-240 | 53-58 | 28-35 |
| Beef tallow | 1.457-1.459 | 190-202 | 40-47 | 40-48 |
| Lard | 1.458-1.461 | 192-203 | 32-43 | 33-46 |
| Mutton tallow | 1.455-1.458 | 192-197 | 43-48 | 44-51 |
| Cod liver | 1.470-1.475 | 180-190 | — | — |
| Herring | 1.465-1.467 | 179-194 | 23-27 | — |
| Menhaden | 1.472-1.475 | 189-193 | 31-33 | — |
| Whale | 1.465-1.472 | 185-194 | 22-24 | — |

* RI at 40 °C unless otherwise stated.

in the Codex Alimentarius Standards for Fats and Oils.^{58a} The link with oil composition has also prompted the computer prediction of RI values from GLC measurements of fatty acid composition, combined with measurements of acid value and titre.⁵⁹ The refractive indices of a selection of oils are given in Table 1.3.

1.4.2 Saponification Value

The Saponification value (SV) of a fat is defined as the number of milligrams of potassium hydroxide required to saponify 1 g of the oil or fat. In the execution of the test, the sample is boiled under reflux with an excess of ethanolic potassium hydroxide solution, and the excess is then back titrated with standard hydrochloric acid solution using phenolphthalein indicator. The method is standardised in BS 684 Section 2.6, and by IUPAC in method 2.202 (ref. 2, p. 56). The saponification equivalent (SE) is the number of grams of the oil or fat saponified by 56.1 g (i.e. 1 equivalent) of potassium hydroxide. Thus

$$SE = 56.108/SV$$

As the majority of oils and fats consist essentially of triglycerides the SE is an estimate of the mean molecular weight of the constituent acids. The mean molecular weight of the triglycerides in the oil is then approximately equal to $3 \times SE$.

As in other tests depending on the use of ethanolic potassium hydroxide, the solution should be standardised immediately before use. It should be a pale straw colour, or be colourless. For storage, it should be kept in a brown glass bottle provided with a rubber stopper. In some cases darkly coloured oil samples may lead to titration difficulties, in which case it is advisable to change to a solution of alkali blue 6B indicator. Another problem that can be encountered with this test is that of incomplete saponification, especially when wool grease or lanolin, sperm whale oil, or jojoba oil are being tested, as these oils contain high amounts of wax esters. Difficulties of incomplete saponification are also sometimes reported with groundnut oil and sunflowerseed oil, and with oils containing unusually large amounts of unsaponifiable material. Saponification values suspected to be on the low side should always be checked for this eventuality. The difficulty can usually be overcome by taking care to mix the reaction mixture thoroughly and often while it is refluxing, and if necessary prolonging the time allowed for refluxing. Knight⁶⁰ claims that good results can be obtained with waxes if the ethanolic potassium hydroxide is diluted

This point is illustrated in Tables 4.3A and 4.3B, which give most of the available fatty acid methyl ester ECL data for Carbowax-20M in the form of a comprehensive analysis of a concentrate of PUFA (polyunsaturated fatty acids) from fish oil (PUFA-1, Supelco, Inc.), on a Supelcowax-10 WCOT flexible fused silica column, and comparable literature data.

The polarity of Carbowax-20M in one form or another in WCOT columns is slightly less than that of BDS polyester^{28,29} or of the 50% cyano group phases of Table 4.2.

To facilitate an understanding of the lack of chain length overlap with the Supelcowax-10 column and of the way in which simple or complex mixtures of fatty acids can be examined, it is useful to compare the analysis of methyl esters of canola oil with the PUFA-1 methyl ester mixture. Canola is a brassica oil, formerly known as rapeseed oil, but from new varieties low in erucic (22:1n9) acid.⁵⁷⁻⁶⁰ The PUFA-1 mixture lacks methyl esters of saturated fatty acids, which are conveniently supplied by the canola oil, up to 24:0. The latter also has the basic vegetable oil PUFA fatty acids of 18:2n6 (linoleic acid) and 18:3n3 (linolenic acid), and in addition to 18:1n9 and 18:1n7 has some rarer monoethylenic fatty acids (16:1n9, 16:1n7, 16:1n5, 15:1n8, 20:1n9, 20:1n7, 22:1n9, 24:1n9), as well as 16:2n6 and 16:3n3, convenient for identifying acids in PUFA-1, any fish oil, or the cellular and organ lipids from domestic and other animals.

The three parts of chromatograms necessary to illustrate the PUFA-1 separations are Figs 4.9, 4.10 and 4.11. These will be discussed separately. In Fig. 4.9 there is a little 14:0 shown in the canola analysis, and the 16:1 π 7 is followed by a small peak (not marked) for 16:1 π 5. In the PUFA there is a little 14:0 and 16:3 π 3, but the major 16:1 isomer is 16:1 π 7. The 16:2 π 6 and 16:3 π 3 of the vegetable oils may be found in some fish oils, as are 17:0 and 17:1 π 8, but often are exceeded by another C₁₅ fatty acid family of marine plant origin.^{61,62} The elution of 16:4 π 1 before 18:0 (not present in the PUFA-1) is a clear indication of the lack of C₁₆/C₁₈ chain length overlap. These C₁₅ fatty acids have potential as biochemical markers in fat turnover in mammals but have received little attention.

TABLE 4.3A
RETENTION DATA FOR SHORTER CHAIN METHYL ESTERS OF FATTY ACIDS ON POLYOLYCOP LIQUID PHASES, R_f COLUMN
GIVES DISTANCES (MEASURED IN MILLIMETERS ON ORIGINAL CHART) FROM FRONT OF SOLVENT PEAK TO INTERCEPT OR PEAK
FRONTAL TANGENT WITH BASELINE (10 mm = 1 min., cf. PAGES 4.9-4.11). OTHER VALUES ARE EQUIVALENT CHAIN LENGTHS

| <i>R_f</i> (mm) ^a | Supelcowax-10 in fused silica ^a | ECL | PPAP in steel ^b | PPAP in glass ^b | PPAP in steel ^b | PPAP in glass ^b | Carbowax-20M in glass ^b | SP-1000 in glass ^b | Carbowax-20M in glass ^b | Carbowax-20M in glass ^b | Carbowax-20M in silica ^b |
|--|--|-------|----------------------------|----------------------------|----------------------------|----------------------------|------------------------------------|-------------------------------|------------------------------------|------------------------------------|-------------------------------------|
| 16.7 | 14.0 | 14.00 | 14.00 | 14.00 | 14.00 | 14.00 | 14.00 | 14.00 | 14.00 | 14.00 | 14.00 |
| 17.2 | 4.8, 12-TMCTD | 14.05 | — | — | — | — | — | — | — | — | 14.15 |
| 18.0 | 14:1n9 | 14.20 | 14.22 | — | — | — | — | — | — | — | 14.16 |
| 18.8 | 14:1n7+7 | 14.31 | 14.28 | — | — | — | 14.19 | — | — | — | 14.39 |
| 19.5 | 14:1n5 | 14.40 | 14.40 | — | — | — | 14.32 | — | — | — | 14.59 |
| 20.2 | 15:0-15:0 | 14.51 | 14.53 | 14.50 | — | — | 14.52 | — | — | — | 14.71 |
| 21.5 | Antkco-15:0 | 14.67 | 14.67 | 14.69 | 14.71 | 14.66 | 14.66 | — | — | — | 14.82 |
| 22.1 | 14:17 | 14.75 | — | — | — | — | — | — | — | — | — |
| 23.3 | 14:17 | 14.92 | — | — | — | — | — | — | — | — | — |
| 24.0 | 15:0 | 15.00 | 15.00 | 15.00 | 15.00 | 15.00 | 15.00 | 15.00 | 15.00 | 15.00 | 15.00 |
| 26.5 | 15:1n8 | 15.25 | — | — | — | — | 15.18 | — | — | — | — |
| 27.2 | 15:1n6 | 15.42 | — | — | — | — | 15.27 | — | — | — | — |
| 28.8 | 15:0-16:0 | 15.49 | 15.53 | 15.49 | 15.52 | — | 15.52 | — | — | — | — |
| 32.0 | Prismatic | 15.70 | 15.83 | 16.00 | 16.00 | 16.00 | 16.00 | 16.00 | 16.00 | 16.00 | 16.00 |
| 34.5 | 16:0 | 16.00 | 16.00 | 16.00 | 16.00 | 16.00 | 16.00 | 16.00 | 16.00 | 16.00 | 16.00 |
| 36.1 | 16:1n9 | 16.12 | 16.21 | 16.28 | 16.21 | 16.21 | 16.15 | — | — | — | 16.20 |
| 37.6 | ? | 16.22 | 16.27 | 16.35 | 16.35 | 16.28 | 16.21 | — | — | — | 16.26 |
| 38.0 | 16:1n7 | 16.26 | — | — | — | — | 16.24 | — | — | — | 16.30 |
| 40.0 | 7-Me 16:0 | 16.40 | — | 16.42 | — | — | 16.32 | — | — | — | 16.38 |
| 41.2 | 16:1n5 | 16.49 | — | — | — | — | 16.49 | — | — | — | 16.61 |
| 42.5 | 15:0-17:0 | 16.50 | 16.53 | 16.50 | — | — | 16.52 | — | — | — | 16.69 |
| 43.5 | ? | 16.56 | — | — | — | — | 16.66 | — | — | — | 16.82 |
| 44.1 | Antkco-17:0 | 16.70 | 16.67 | 16.68 | 16.72 | 16.67 | 16.66 | — | — | — | 16.82 |
| 45.0 | 16:3n6? | 16.82 | — | — | — | — | 16.82 | — | — | — | — |

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